

Chess and mathematics



John Foley

@ChessScholar

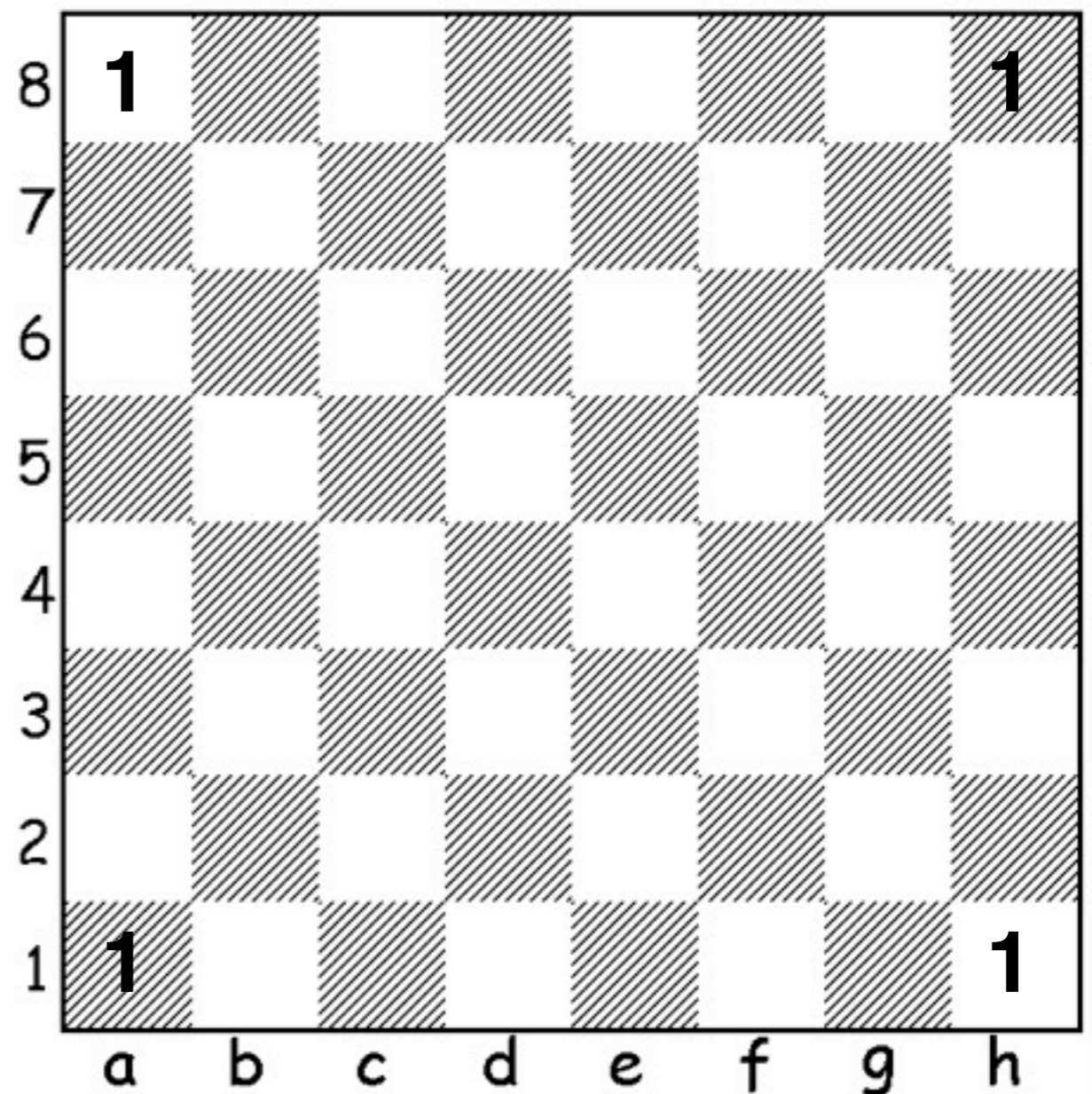


Chess corner puzzle

There is a piece on each of the corner squares. Each piece attacks at least one corner.

The numbers show the sum of the attacks onto that corner.

What are the pieces in the corners?
(Colour doesn't matter.)

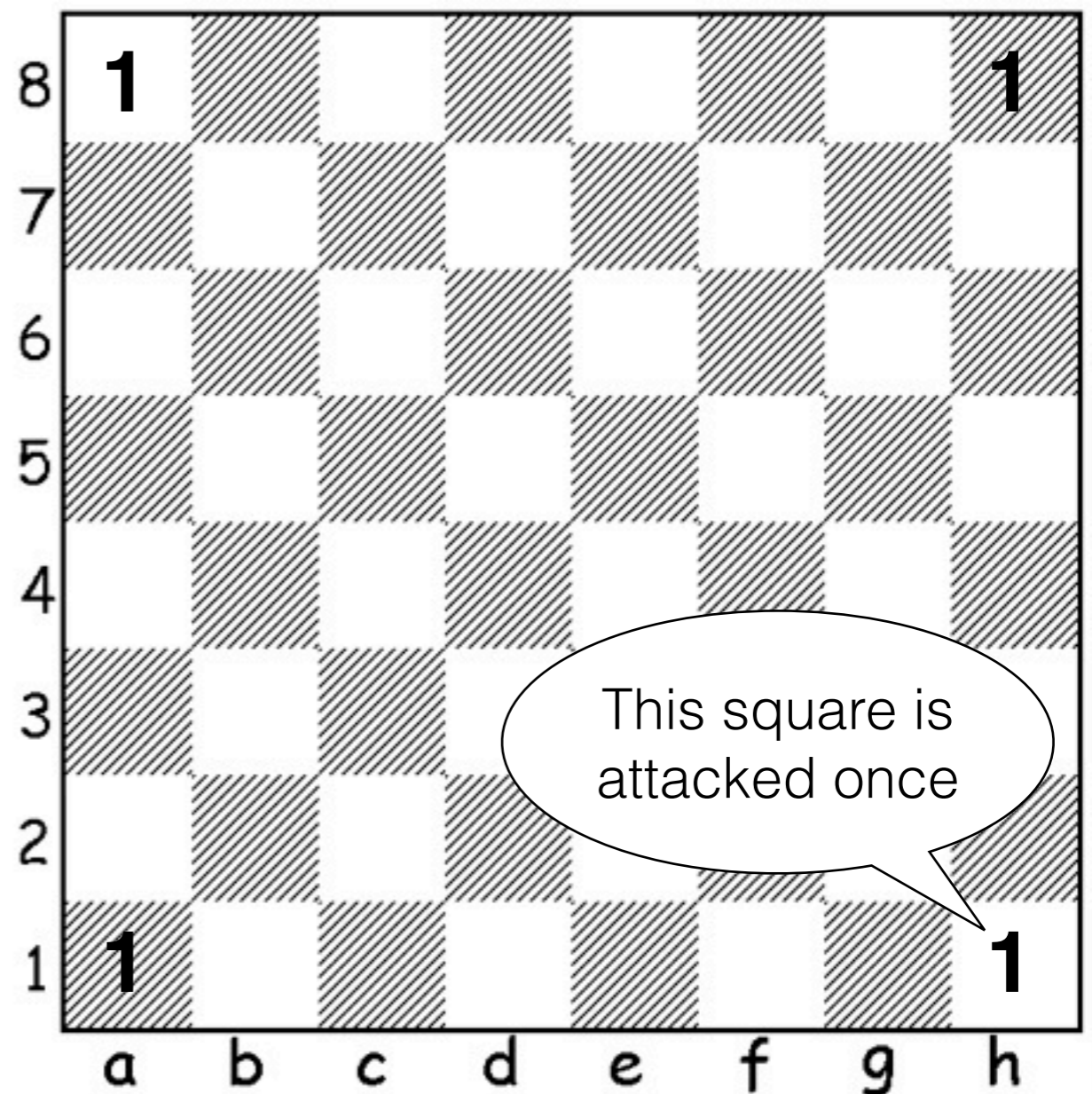


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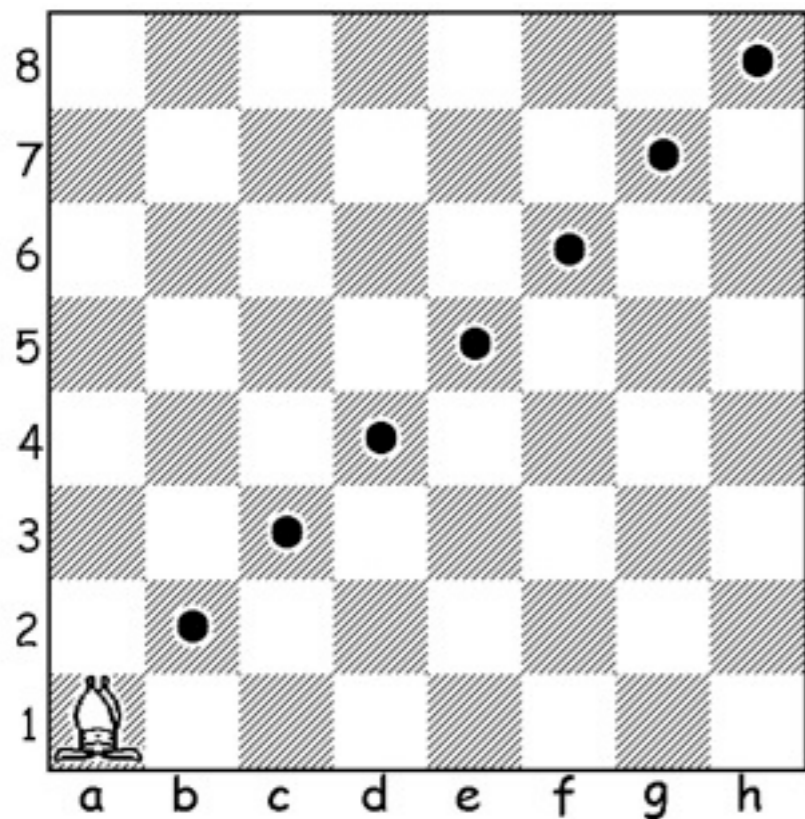
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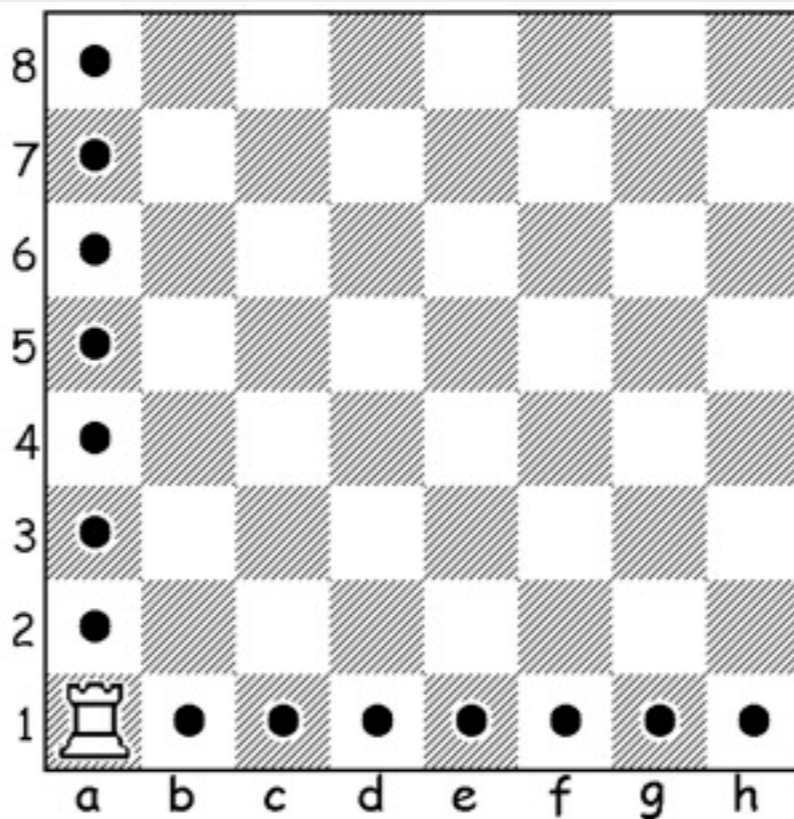
This square is attacked once

Long distance pieces

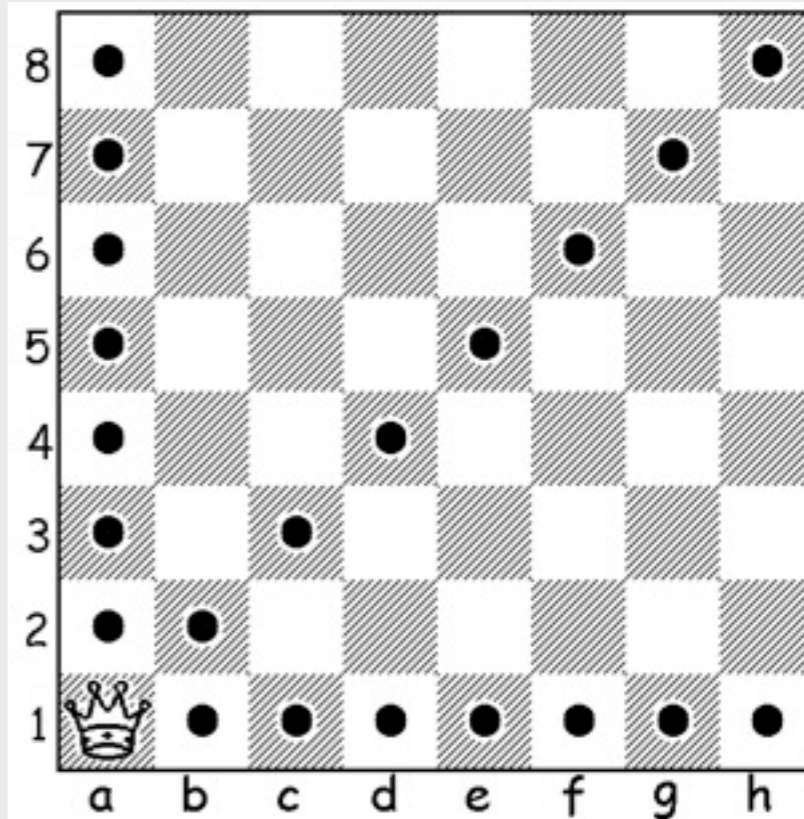
Bishop



Rook



Queen

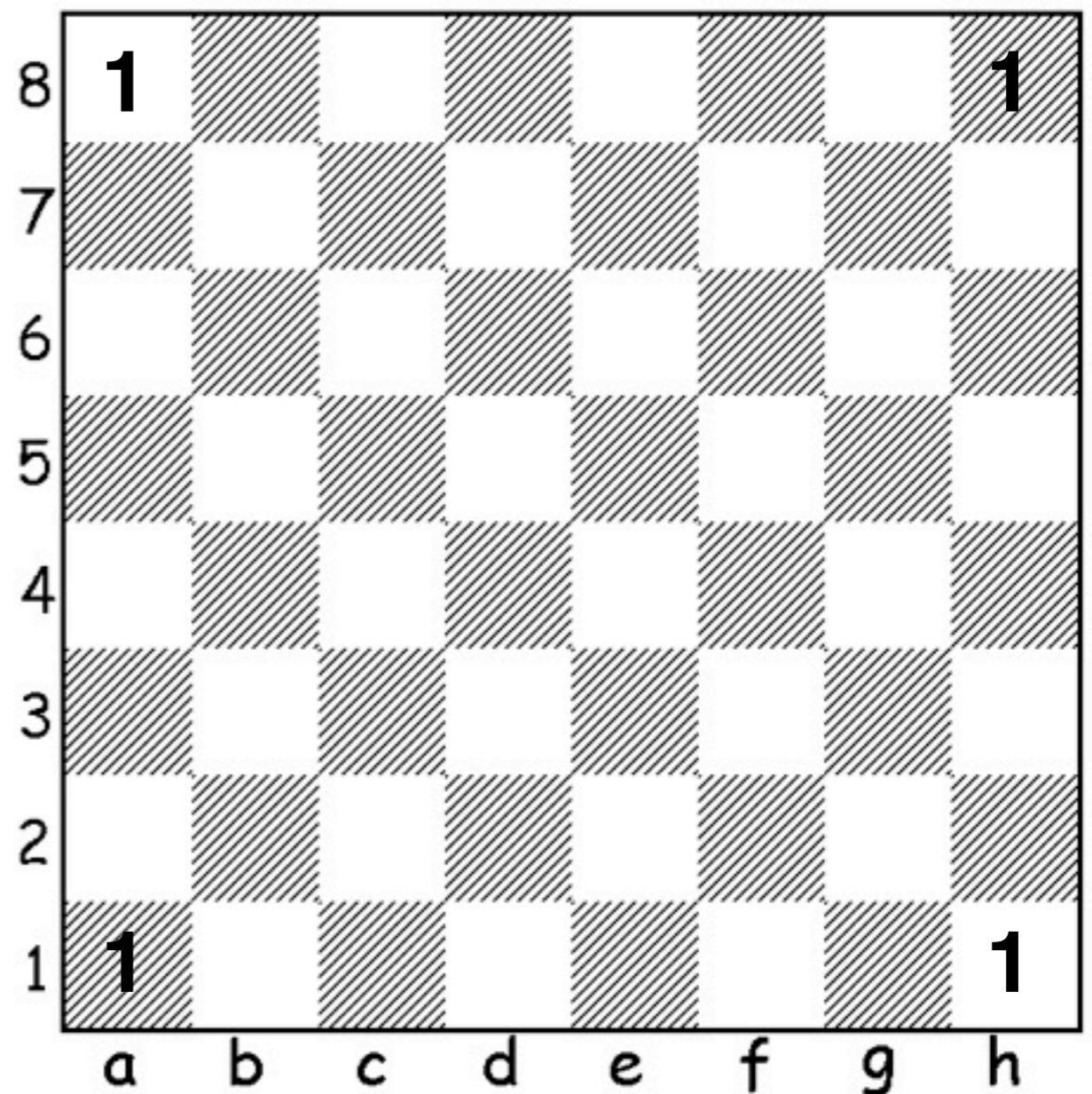


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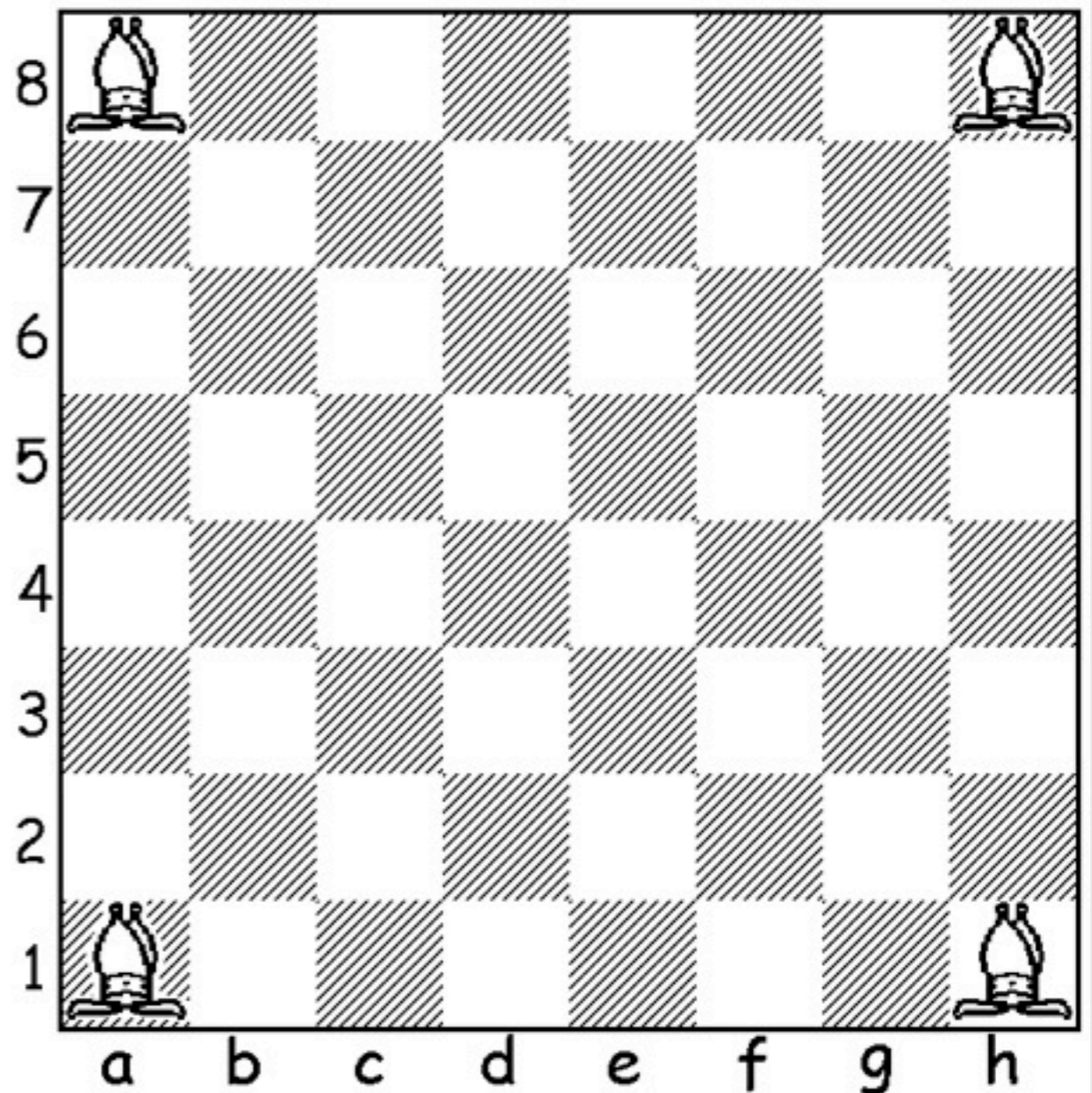


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The answer is all the pieces are bishops.

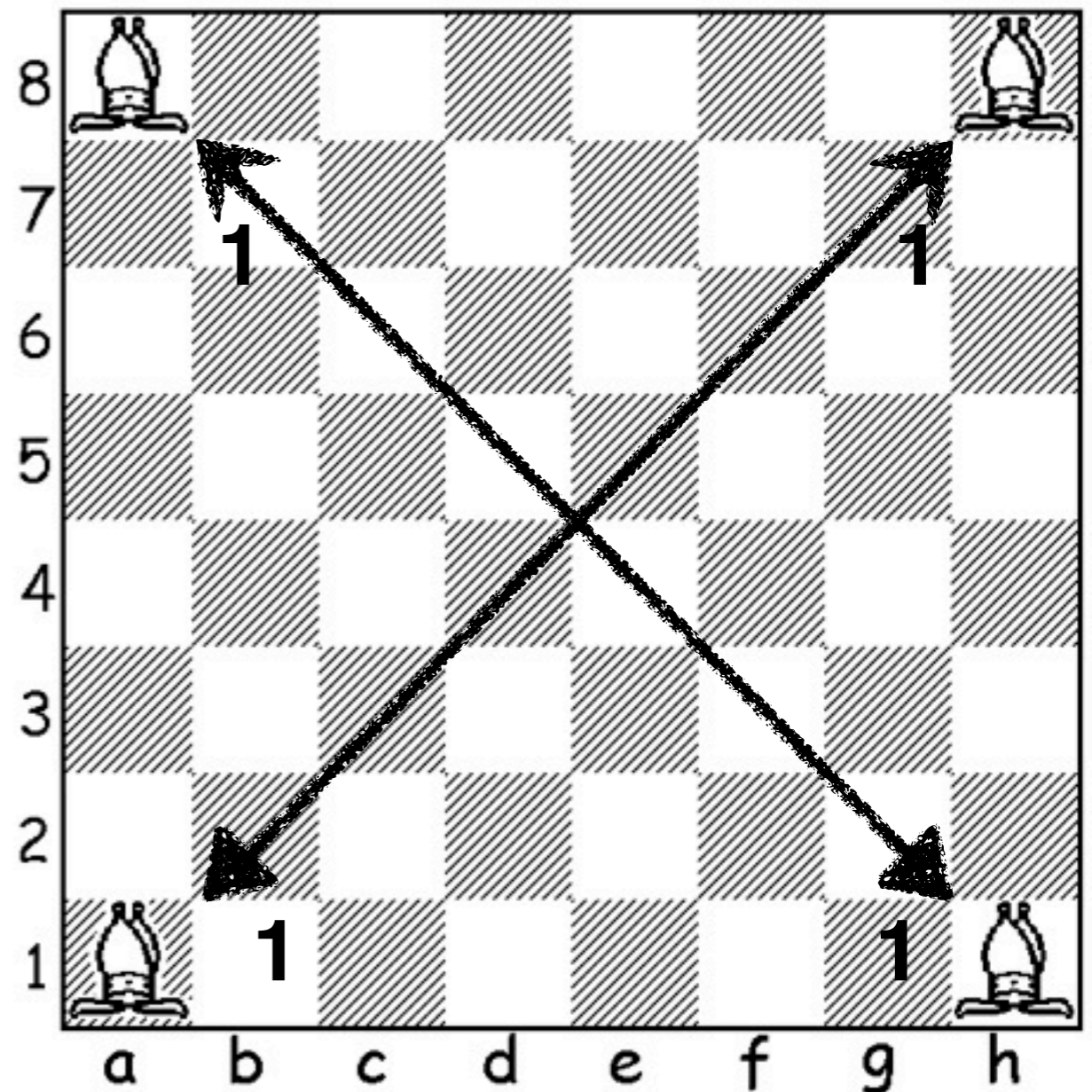


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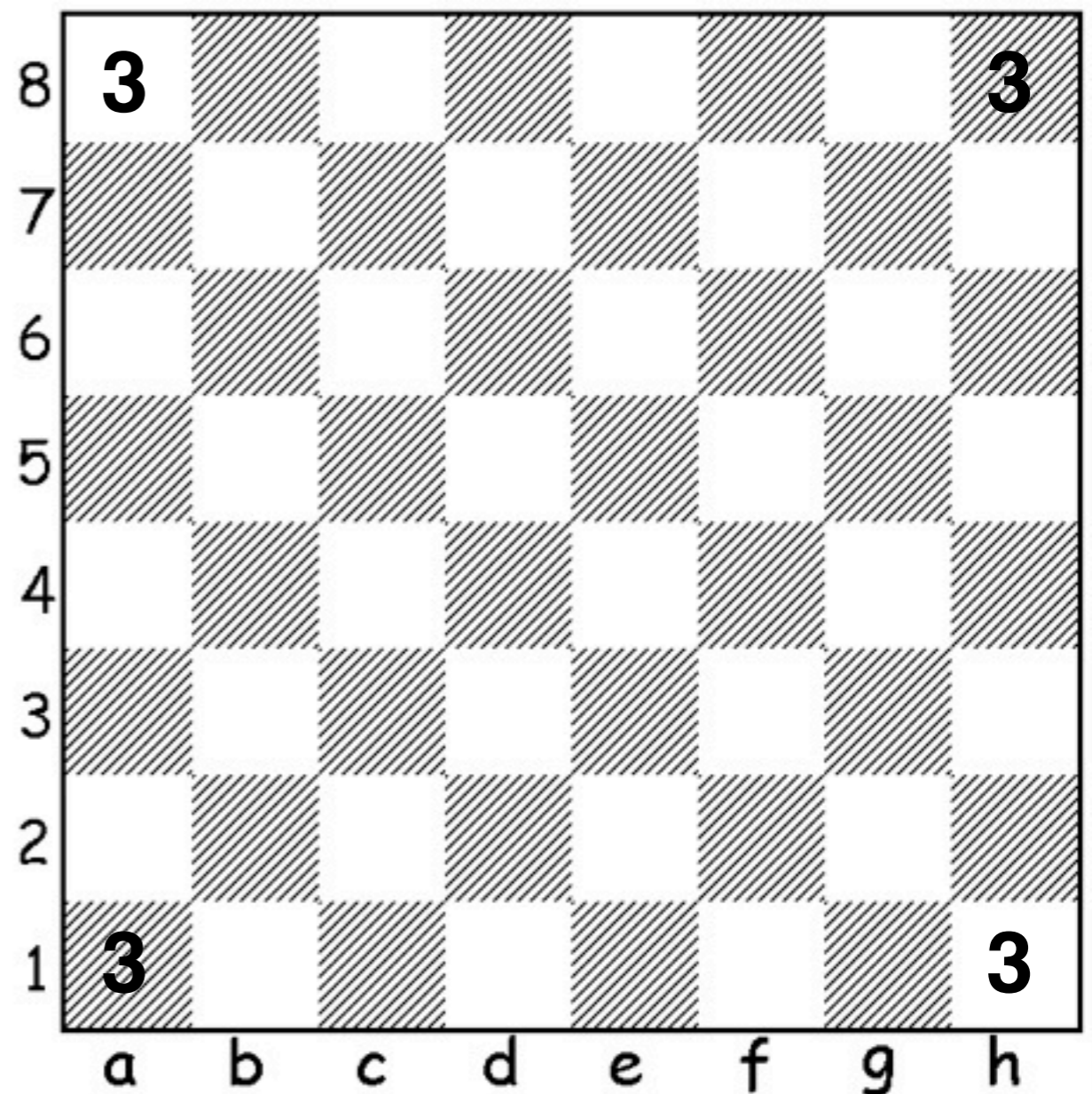
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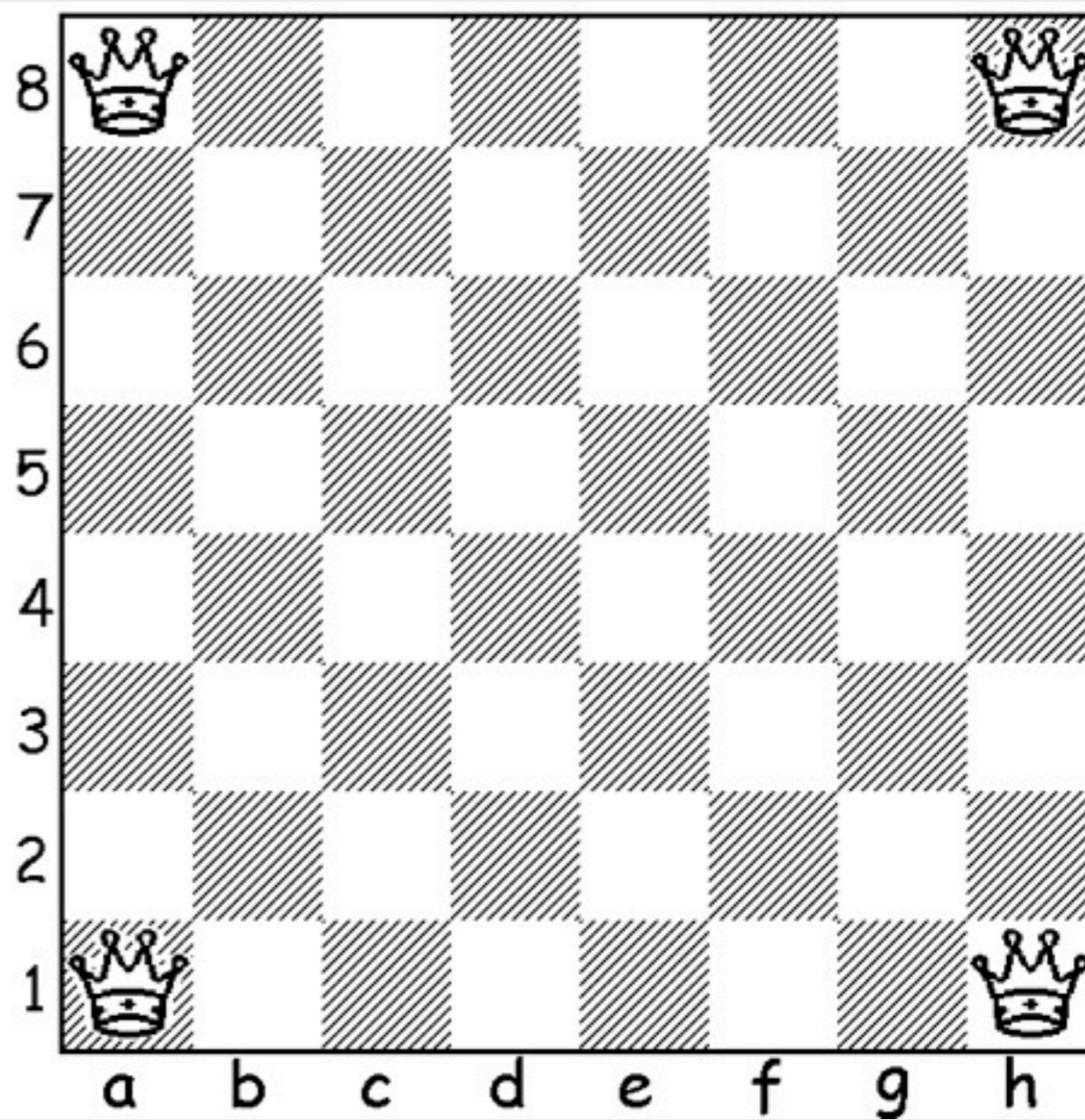
Chess corner puzzle

Let's try another one



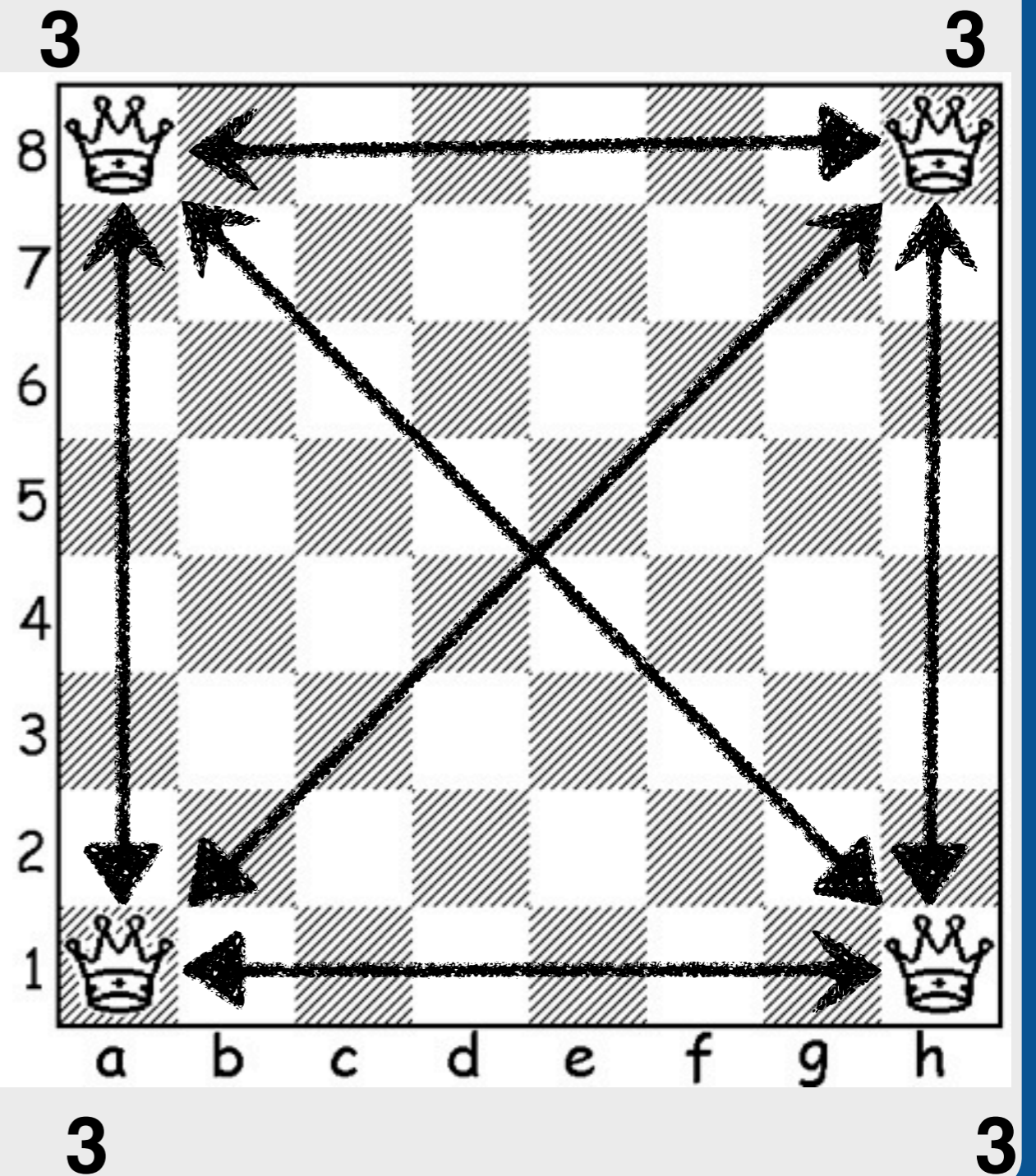
Chess corner puzzle

All queens



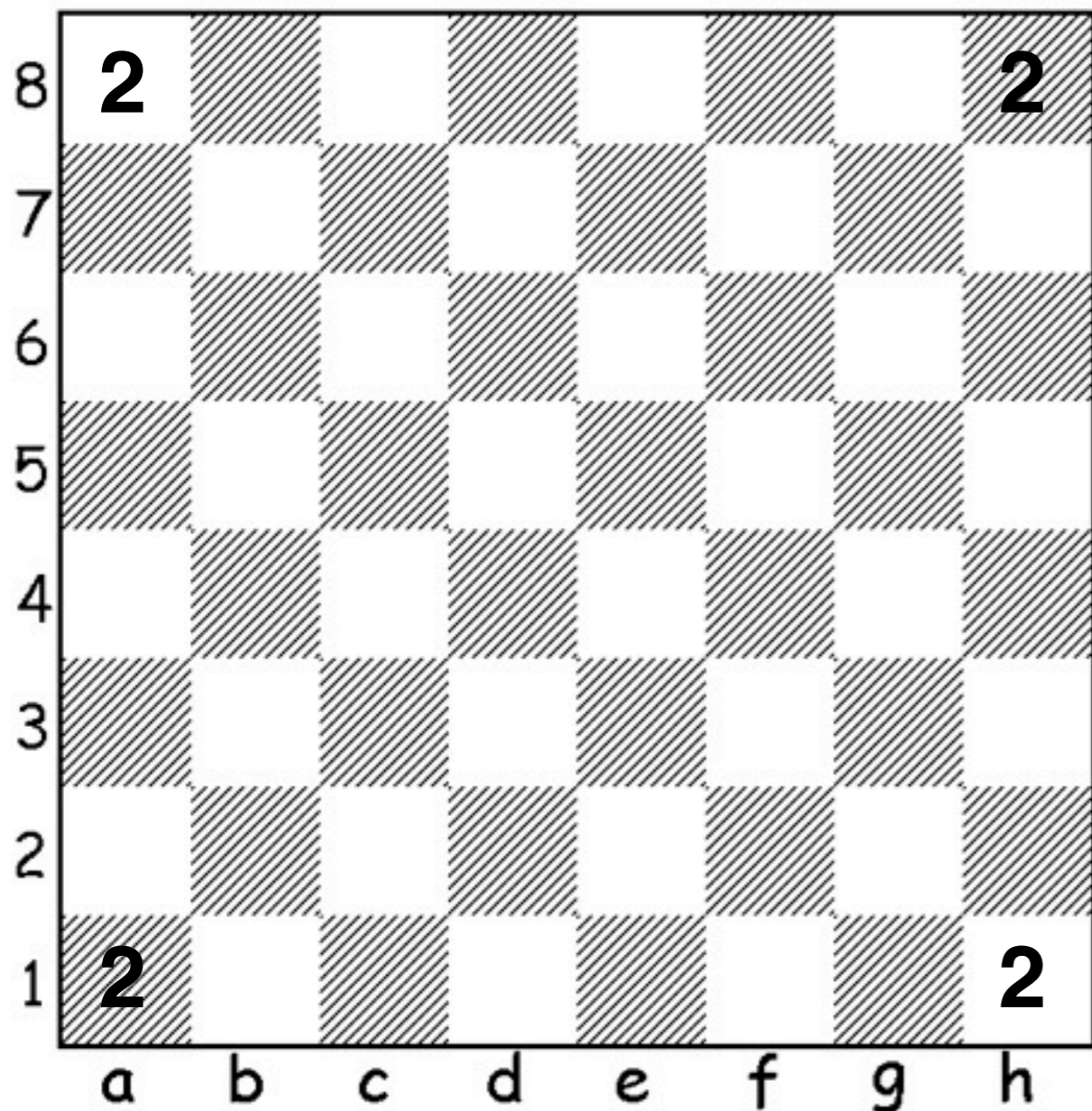
Chess corner puzzle

All queens



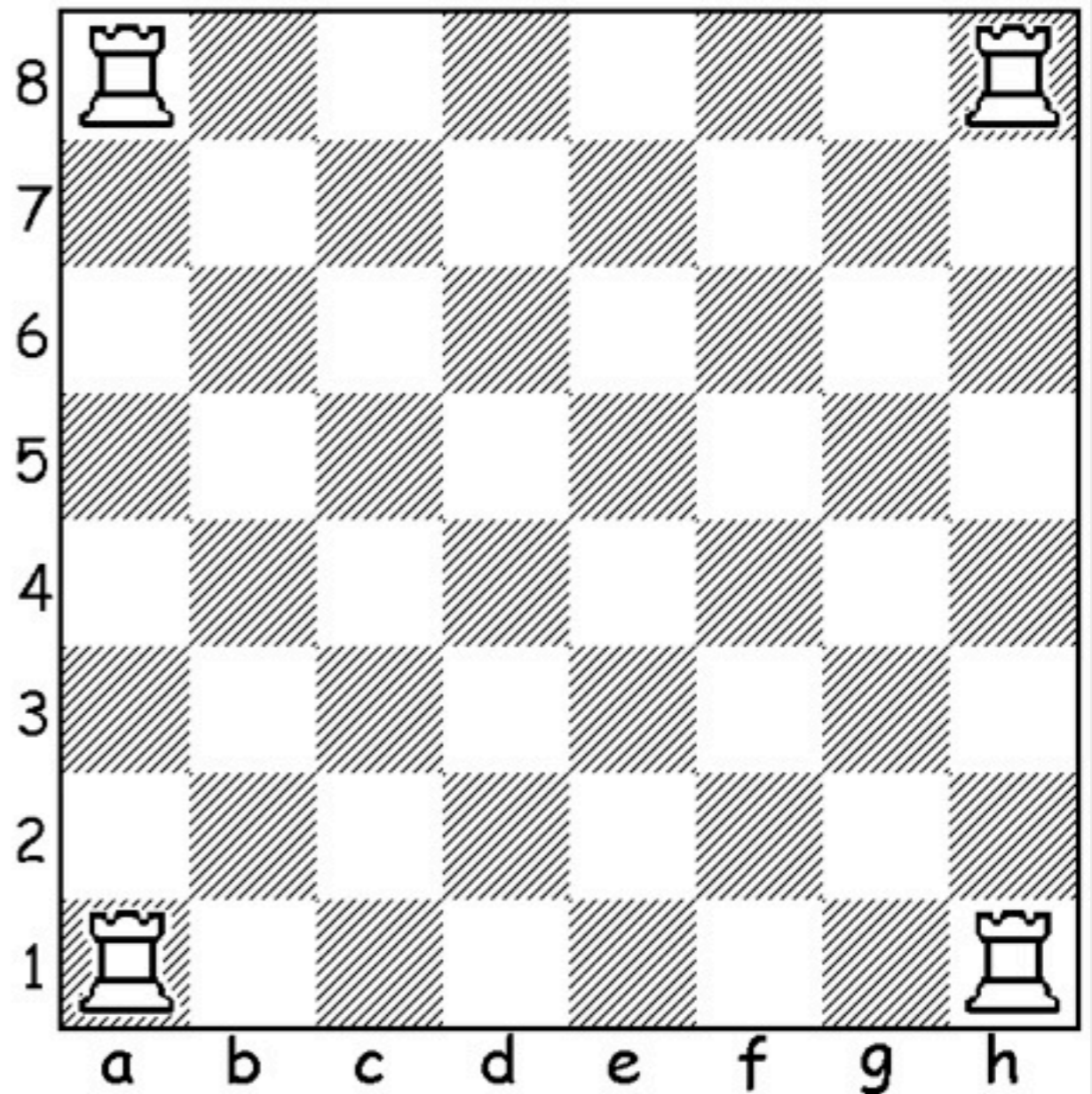
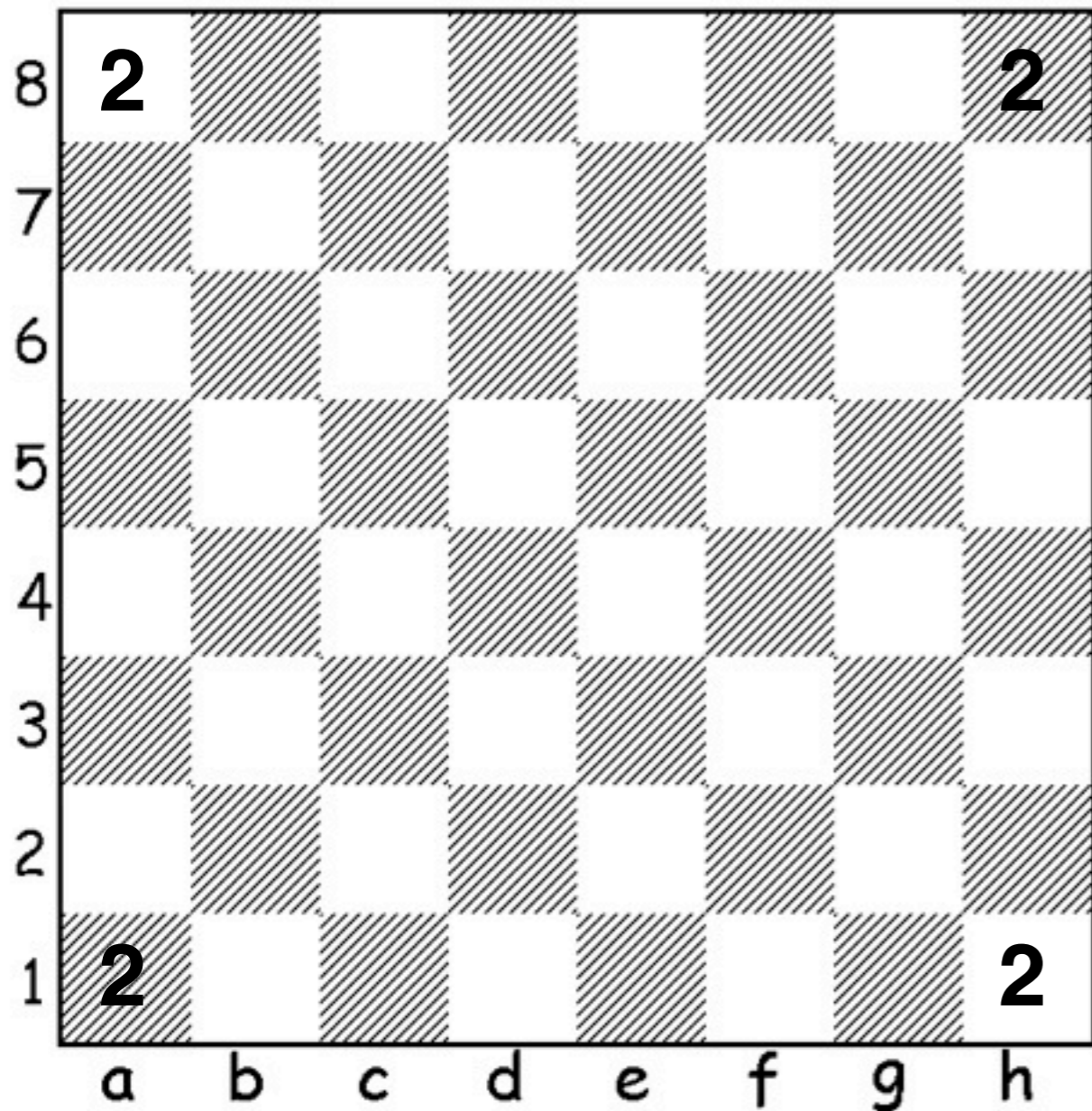
Chess corner puzzle

Maybe there's a pattern

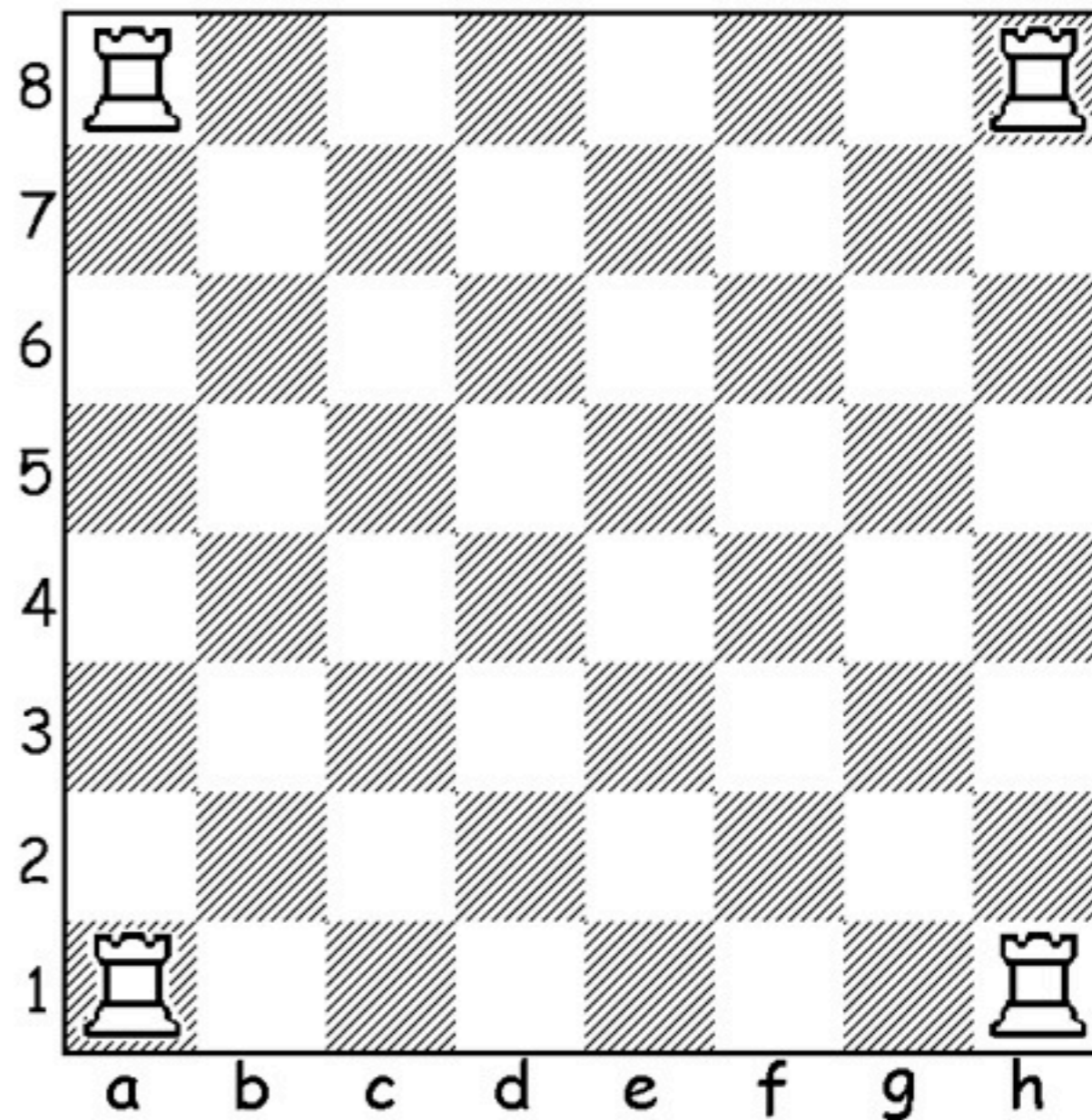
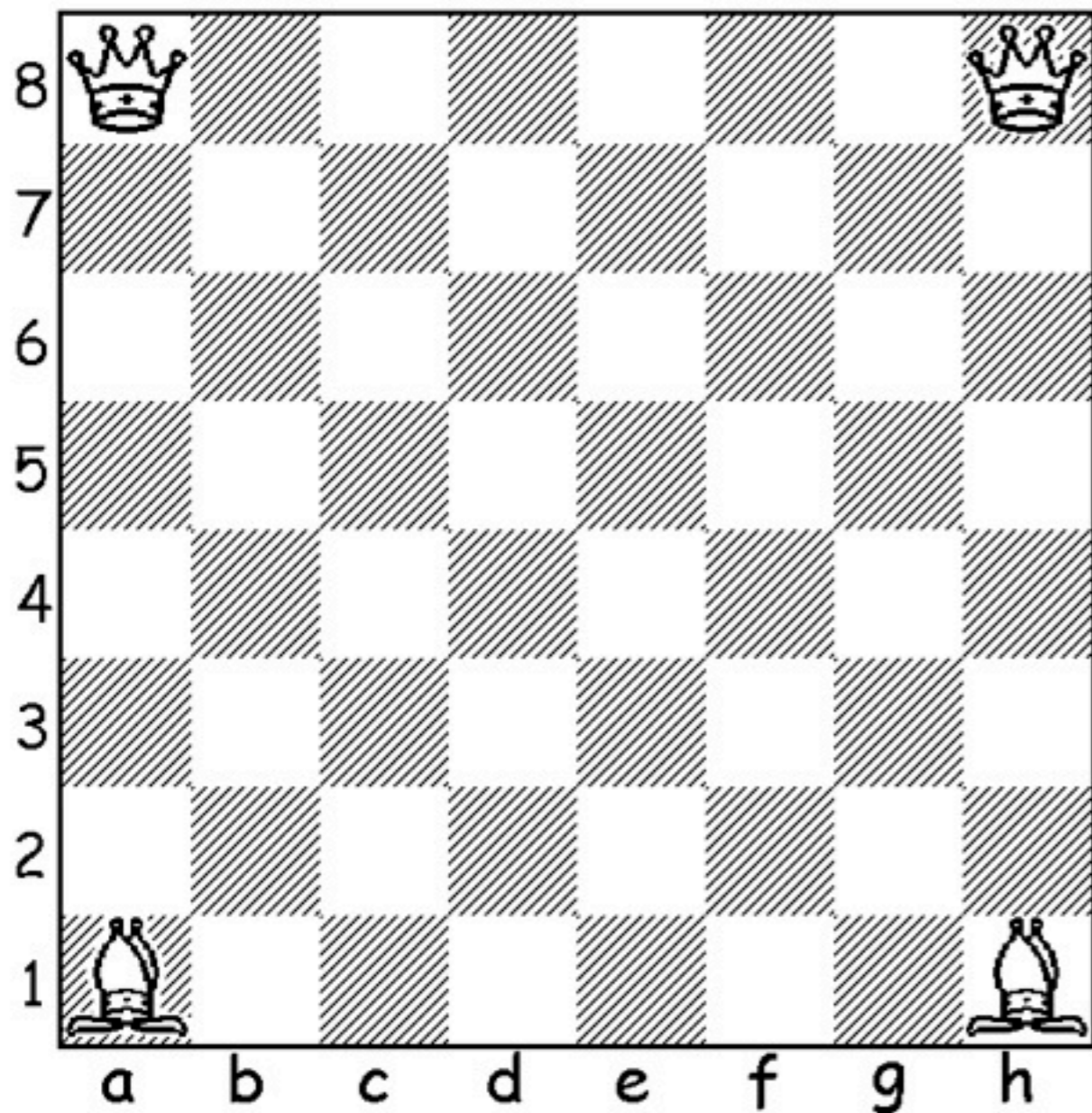


Chess corner puzzle

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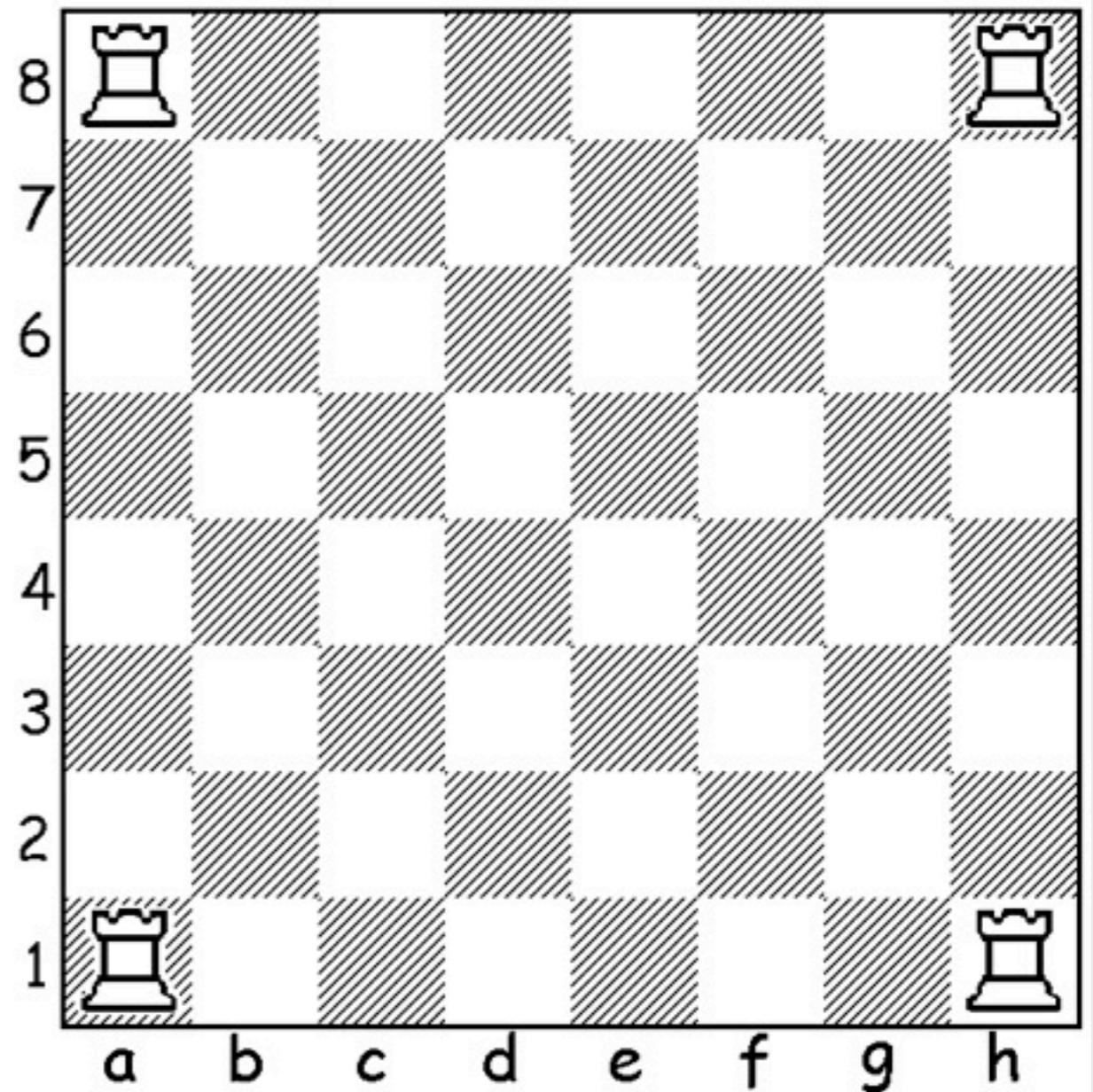
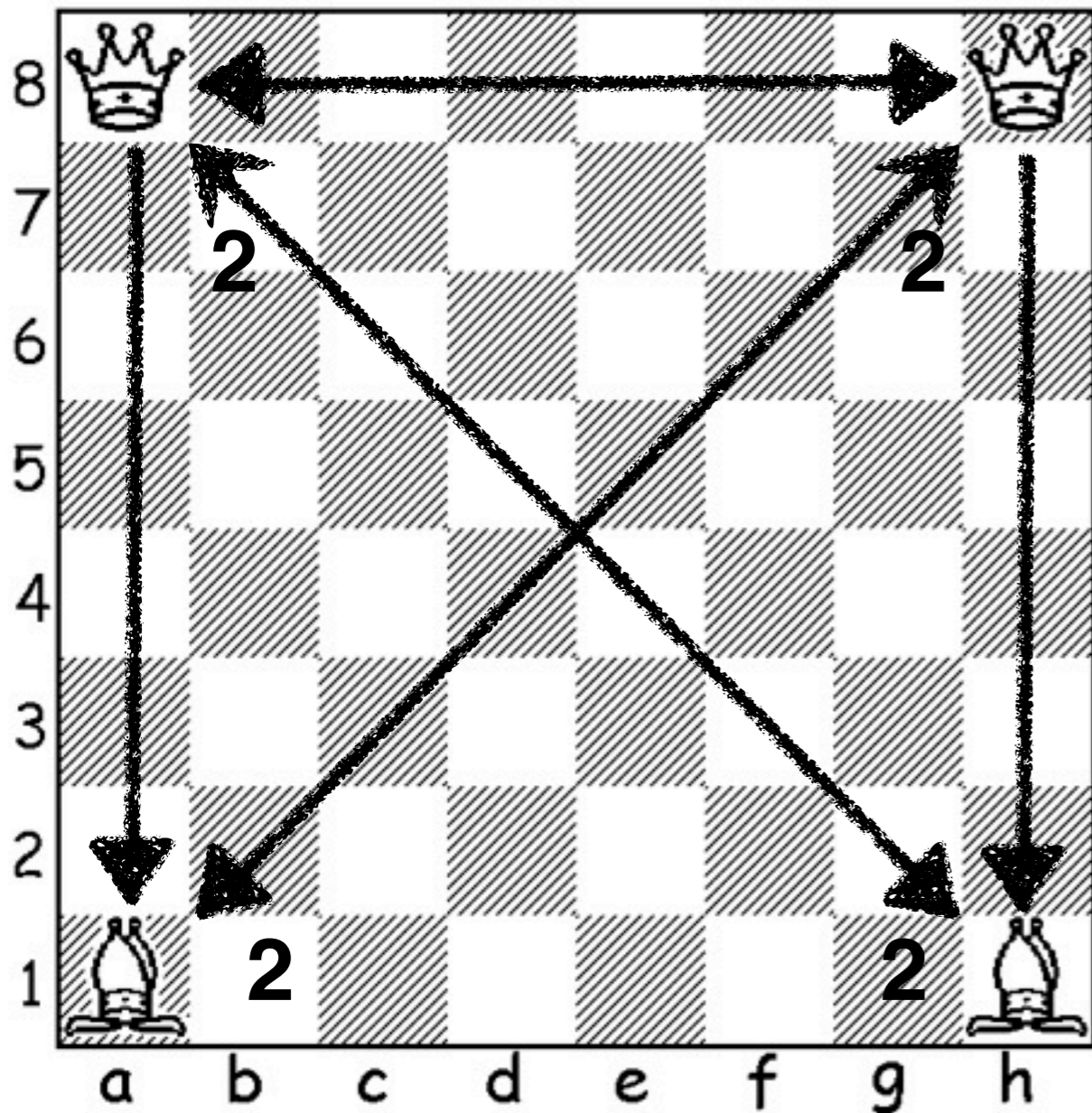


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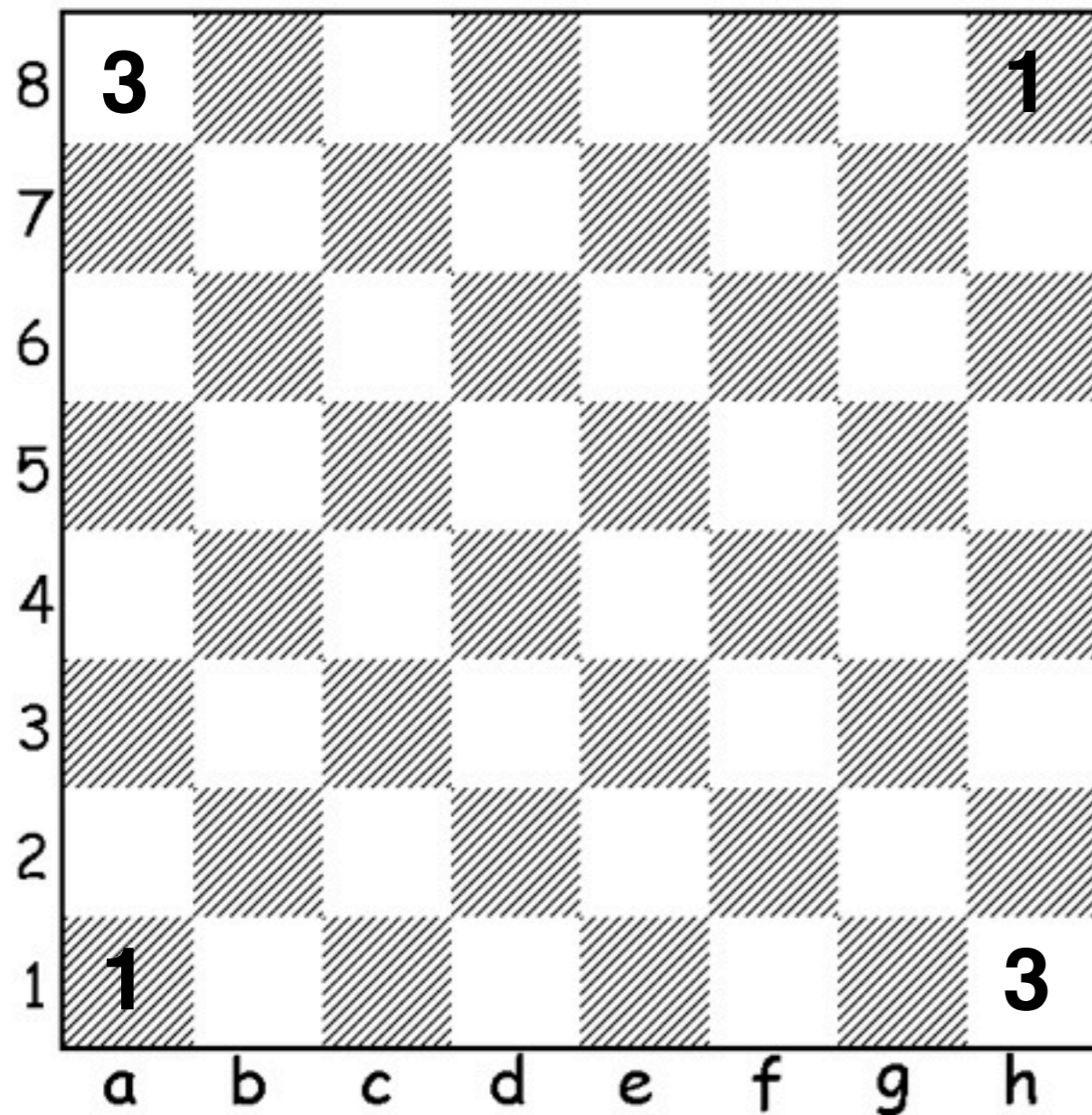
Chess corner puzzle

Or maybe not



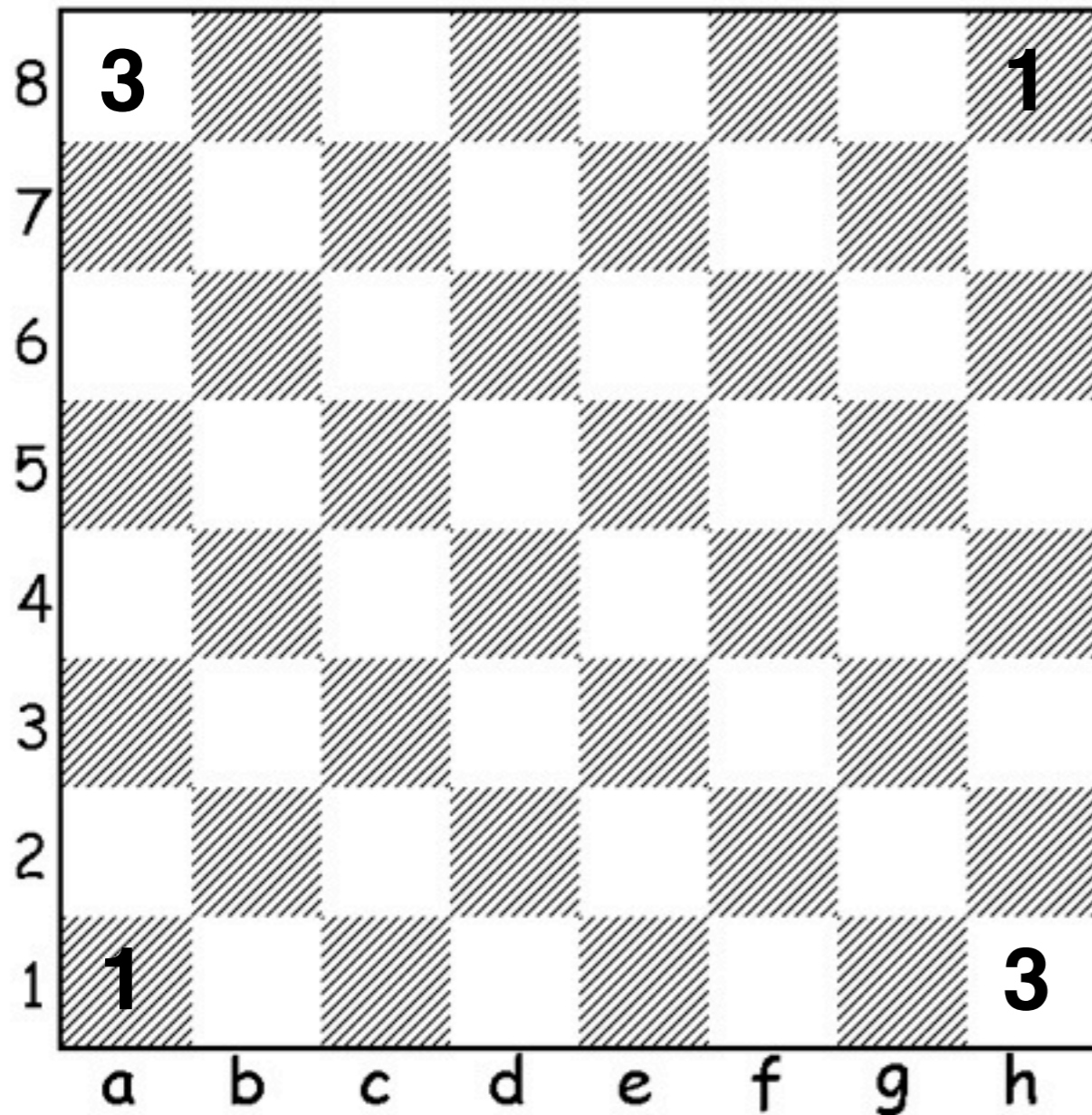
Chess corner puzzle

Can this be solved?

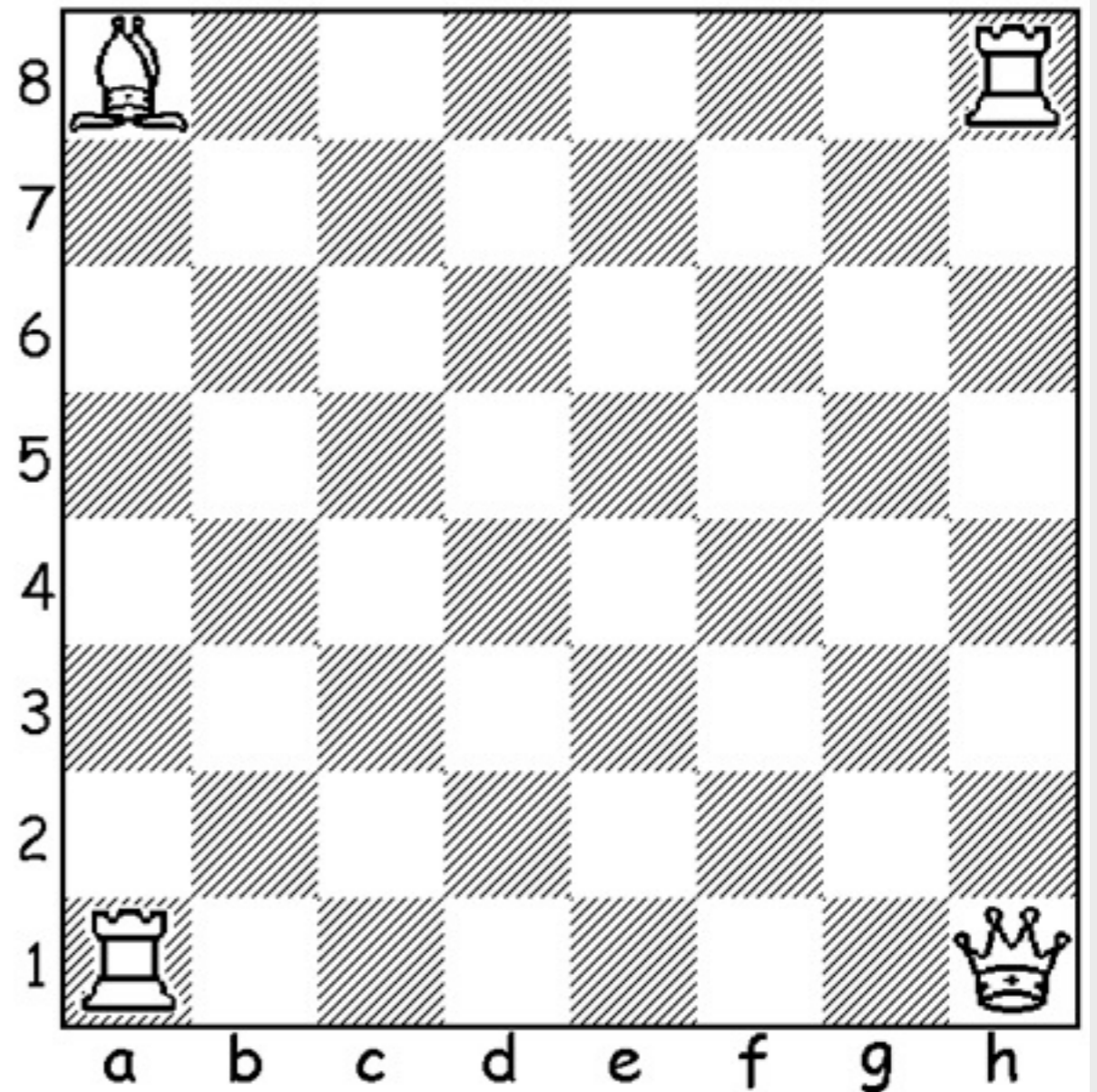


Chess corner puzzle

Can this be solved?

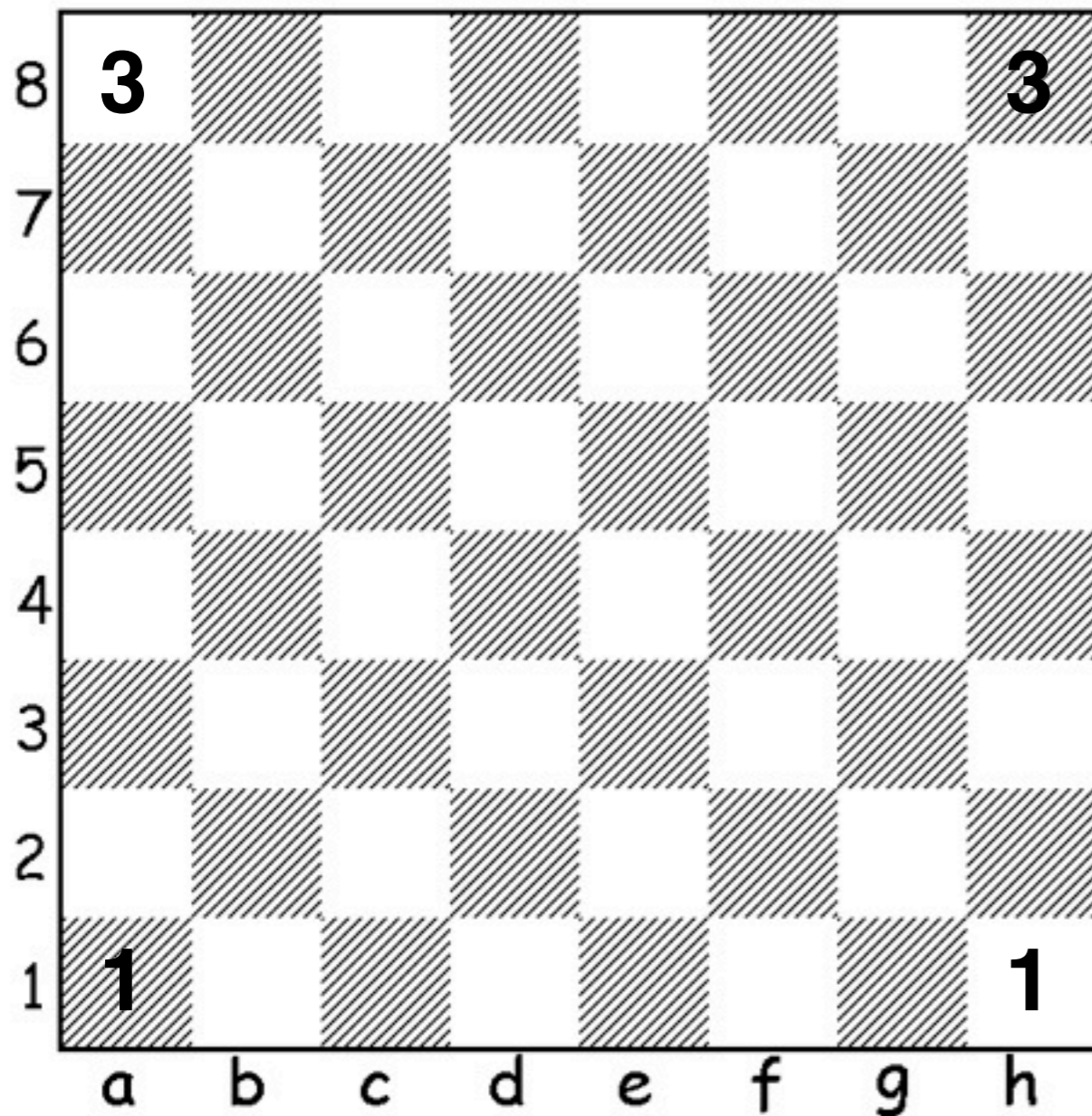


Yes



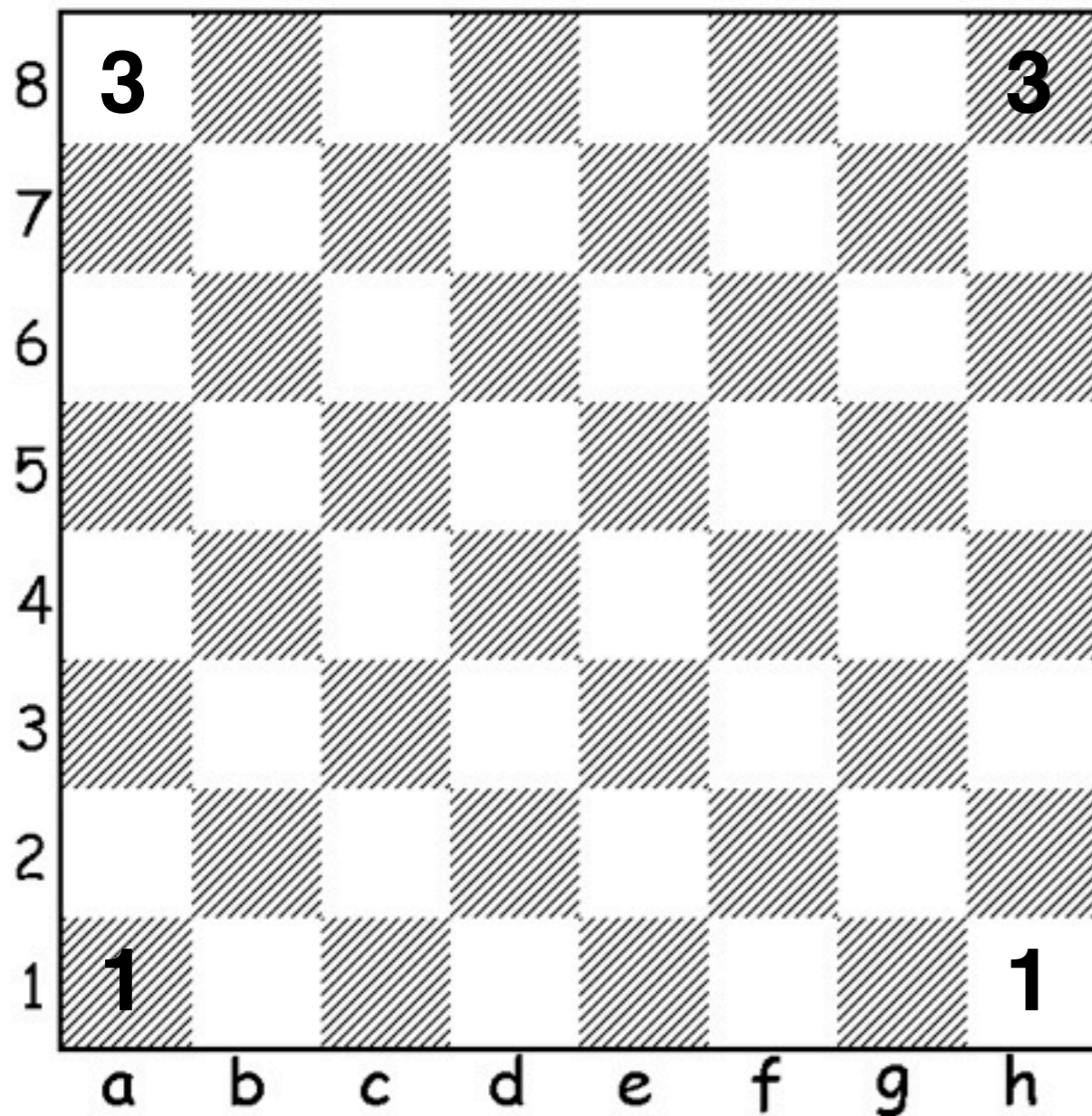
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Can this be solved?



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Can this be solved?



No

Chess corner puzzle

$3^4 = 81$ states
e.g. R,B,B,R

How many solutions
for each?

$4^4 = 256$ Puzzles
e.g. 0,3,3,0

Which ones can be solved?

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